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# Economic Aspects of Peer Support Groups for Psychosis

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**Abstract** Peer support groups are rarely available for patients with psychosis, despite potential clinical and economic advantages of such groups. In this study, 106 patients with psychosis were randomly allocated to minimally guided peer support in addition to care as usual (CAU), or CAU only. No relevant differences between mean total costs of both groups were found, nor were there significant differences in WHOQoL-Bref outcomes. Intervention adherence had a substantial impact on the

results. It was concluded that minimally guided peer support groups for psychosis do not seem to affect overall healthcare expenses. Positive results of additional outcomes, including a significant increase in social contacts and esteem support, favour the wider implementation of such groups.

**Keywords** Guided peer support group · Psychosis · Economic evaluation · Cost

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## Introduction

Psychotic disorders—and schizophrenia in particular—have a negative and restricting influence on social life. People suffering from psychosis report the need for peer support groups to share their experiences. By sharing experiences they can offer each other appraisal, emotional and informational support (Dennis 2003), and hope (Davidson et al. 2006). Although the literature on the effectiveness of peer support groups for chronic somatic diseases reports conflicting findings, peer support is well accepted and provided for diseases like diabetes, cancer and asthma (Doull et al. 2005). In contrast, peer support in mental healthcare is still early in its development (Davidson et al. 2006), not well studied, and seldom part of the standard care provided (Hyde 2001).

In 2003, the University Medical Center Groningen started a multi-centre randomized controlled trial to study the effectiveness of minimally guided peer support groups in people with psychosis (Castelein et al. 2008a). Peer support groups aimed at psychosis had not been investigated in a controlled design before. Quality of life was the primary outcome of the study, other outcomes were social network, social support, self-efficacy and self-esteem.

Alongside this clinical study, an economic evaluation was conducted to inform decision-makers on the economic aspects of minimally guided peer support for psychosis. It is well known that psychotic disorders are among the most expensive illnesses worldwide, leading to considerable burden for patients and their carers, the healthcare system and the community as a whole (Knapp 1997). In this context, information from economic studies focusing on psychotic disorders is of much importance for decision-makers to identify, prioritise and implement interventions that use the available healthcare resources most efficiently. In recent years, peer support for psychosis appears to have become increasingly relevant for mental healthcare institutions, especially when considering the pressing budget constraints and limited human resources (Barlow et al. 2002). Peer support groups do not seem to cost much in terms of initial investments, and only few healthcare resources are required to sustain these groups (Solomon 2004). Moreover, it has been suggested that peer support may actually lead to cost savings by decreased utilisation of mental health services (Segal et al. 1998).

Despite the assumed clinical and economic advantages of peer support groups in psychosis, no previous studies have closely examined economic aspects of these groups. Consequently, it is currently unclear whether peer support should be wider implemented in mental healthcare systems. This paper presents the results of the first economic evaluation examining costs and health outcomes of minimally guided peer support groups in psychosis.

## Methods

The economic evaluation was part of an 8-month randomised controlled trial (ISRCTN: 02457313) on the effectiveness of minimally guided peer support provided in addition to care as usual (CAU) for individuals with a history of psychosis. The design of the clinical trial will briefly be described in the following sections, details are presented elsewhere (Castelein et al. 2008a).

### Study Population and Randomisation Procedure

Recruitment of patients took place between January and August 2003 in four outpatient clinics located in different parts of The Netherlands. Patients were eligible for the study if they had experienced one or more psychotic episodes in the past and were at least 18 years-of-age. Exclusion criteria were: drug or alcohol dependency, language difficulties that would have impeded the assessments and severe psychotic symptoms that would possibly hamper the communication with other peers. Those who met inclusion criteria received information about the study and

were asked to participate. After providing written informed consent, patients were randomly allocated (per centre) to one of the two treatment conditions; minimally guided peer support plus CAU or CAU only. Randomisation was carried out by an independent research associate, who was not involved in the current study. Patients were randomized by computer-generated random block number to ensure an equal balance per centre. The design of the study did not allow for masking researchers to service assignment. However, we expect this to interfere only minimally with the study results as all questionnaires used were self-report instruments.

### Treatments

Care as usual (CAU) in The Netherlands for the targeted patient population consists of various forms of care, depending on the needs and the situation of a specific patient. In practice, CAU may range from low-frequent contacts with healthcare professionals to psychiatric hospital admissions or the use of sheltered living accommodations. During the study, patients in both groups received any type of care (available under the heading of CAU) they required.

In addition, patients who were assigned to the experimental condition also received minimally guided peer support. Each closed peer support group included approximately 10 patients and involved 16 sessions of 90 min biweekly over 8 months (Castelein et al. 2008b). The aim of the intervention was to stimulate peer-to-peer interaction and to limit the influence of healthcare professionals. Nurses were trained in the intervention and the ‘minimal guidance’ attitude: offering structure, continuity, and a sense of security without actively interfering in the group process. Each session had the same structure discussing daily life experiences in pairs as well as group wise. Topics of each session were brought up by the participants.

### Outcome Measures and Power Analysis

The primary outcome measure of the study was the abbreviated World Health Organisation Quality of Life assessment (WHOQoL group 1998). This is a widely used quality of life instrument, with 26 items measuring four domains of well-being, i.e. physical, psychological, social, and environment. Two additional items focus on the overall ‘quality of life’ and ‘general health’. Scores on these four domains and the additional items can be combined to create an overall score of quality of life (ranging from 18 to 90).

Power analyses were based on results of the WHOQoL-Bref in another study (Wiersma et al. 2004) in this patient population; 30 patients were required in each treatment

condition in order to detect a clinically relevant difference of 5 points (SD 9) between groups with an alpha of .05 and a power of 80%. Additional patients were included in the study as some drop-outs were anticipated.

Besides the primary outcome measure, various additional instruments were administered during the study. These instruments focused, among others, on social network, social support, self-efficacy, and self-esteem. Results of these secondary outcomes were not directly included in the economic evaluation.

### Costs and Unit Prices

The economic evaluation focused on costs inside the healthcare sector. Costs that were registered included costs related to inpatient and semi-inpatient care, outpatient and community care, general healthcare, visits to day activity institutions, and medication use (prescribed and non-prescribed). Costs of minimally guided peer support were assessed in detail, and included costs of nurses who attended the peer support meetings, housing costs, and telephone costs of contacting patients. Quantities of used resources were registered for all the patients available at the various times of measurement. Most of the information was collected by means of a detailed questionnaire on healthcare consumption. Measurement took place at 4-month intervals, starting at the time of inclusion until the end of the follow-up period 8 months later ( $T_0$ ,  $T_4$ ,  $T_8$ ). Recall intervals were restricted to the previous 4 months in order to improve the reliability of cost data collected in this specific population. The questionnaire assessed, among others, number of admissions to psychiatric hospitals, contacts with psychiatrists and psychologists, and visits to day activity institutions. Information on medication use was collected through various healthcare professionals involved. In order to facilitate comparisons with other economic evaluations, unit prices, i.e. the price of one unit of each included cost type (available on request), were mainly based on Dutch standard prices (Oostenbrink et al. 2004). True costs of used resources were estimated when standard prices were not available. All unit prices were based on the price level of the Euro in the year 2005. Reference prices established for previous years were adjusted to prices of 2005 by applying the consumer price index.

### Design of the Economic Evaluation and Statistical Analysis

The economic evaluation was designed as a cost-effectiveness analysis. In cost-effectiveness analysis, costs and the primary outcome measure are used to calculate the incremental cost-effectiveness ratio relative to one or more

alternatives (Drummond et al. 1997). In the present study, costs and health outcomes of patients who were allocated to the peer support condition were compared with results of patients in the CAU condition. Primary outcome measure in the economic evaluation was the WHOQoL-Bref, the instrument on which power analyses of the clinical study were based. Costs and health outcomes were not discounted due to the relatively short time horizon of the study.

Various additional analyses, including bootstrap analyses, were planned to provide information on the uncertainty of the results of the economic evaluation. Bootstrapping (Efron and Tibshirani 1993) is an iterative method that consists of randomly selecting patient data (with replacement) from the observed population to create a simulated distribution of data. Furthermore, sensitivity analyses were scheduled to examine the consequences of intervention adherence for healthcare utilisation and differences in mean total costs between groups.

Analyses of costs and clinical outcomes were conducted in accordance with the 'intention-to-treat' principle, using mixed model methodology (SPSS 14) under the assumption of missingness at random. Mean total costs and WHOQoL-Bref outcomes were included as dependent variables in the models presented in this paper. Fixed effects consisted of treatment condition, time, and the interaction between treatment and time. Baseline outcomes ( $T_0$ ) were included as covariate in the models to account for initial differences between groups. *P*-values less than 0.05 were considered statistically significant.

## Results

### Patient Characteristics

Details on patient characteristics and patient flow are described in the clinical paper (Castelein et al. 2008a). In total 128 patients were referred to the study, of whom 22 were excluded for various reasons. The remaining 106 patients were included after providing informed consent. Mean overall age of these patients was 39 years (SD 11), 65% was male. By far the most patients had experienced more than two psychotic episodes in the past. The mean duration of illness was approximately 10 years (SD 9). Of the 106 included patients, 56 patients were randomly assigned to the peer support condition and 50 to care as usual (CAU). There were no significant differences between these groups on any of the assessed baseline characteristics, which included age, gender, psychotic episodes, duration of illness, educational level, and occupational status.

## Healthcare Utilisation and Costs

Table 1 shows the various medical costs generated by both groups during the 8 months of the study. Furthermore, this table also displays information on the utilisation of healthcare services; the percentage of patients using each cost type involved is provided.

Costs of admissions to psychiatric hospitals had a substantial influence on total costs (approximately one-third of the total costs in each group). The use of sheltered living accommodations was associated with considerable cost differences between groups. For most types of community care, costs were higher for patients in the peer support group. On the other hand, costs of visiting daily activity institutions were higher for CAU. The interpretation of these various differences is not straightforward, since there were already differences in service use and costs between groups prior to the study. This will be discussed in more detail when comparing the total costs during the entire study period.

The mean costs of providing minimally guided peer support were €250 per patient. Of these costs, approximately €40 consisted of fixed costs, i.e. these costs were the same for all the patients in this group, which included costs of an individual contact with a nurse prior to the start of peer support meetings. Costs of attending a peer support meeting were estimated at about €20 per meeting per patient (including housing costs, attendance of a nurse, and costs of food/drinks served during these meetings).

## Total Costs and Mixed Model Analyses

An overview of the mean total costs during the various measurement periods of the study is provided in Table 2.

In spite of the randomisation procedure, considerable cost differences were found between groups in the 4 months before the start of the study. Therefore, costs prior to the start of the study were included as covariate in the analyses. Results of the mixed model analyses focusing

**Table 1** Medical costs during the study period of 8 months (T0–T8)

Cost types	Guided peer support group + CAU ( <i>n</i> = 56)		CAU ( <i>n</i> = 50)	
	Mean costs (SD)	% <sup>a</sup>	Mean costs (SD)	% <sup>a</sup>
<i>Intervention</i>				
Minimally guided peer support	250 (97)	100	0 (–)	0
<i>Inpatient and semi-inpatient care</i>				
Hospital admission	1,712 (5,314)	20	1,471 (5,741)	12
Day care	767 (2,377)	14	687 (2,166)	12
Sheltered living	820 (2,984)	7	230 (1,624)	2
<i>Outpatient and community care</i>				
Psychiatrist	255 (348)	64	164 (218)	60
Psychologist	153 (359)	25	81 (208)	20
Social-psychiatric nurse	249 (558)	59	203 (409)	78
Social worker	0 (–)	0	54 (210)	14
Crisis intervention	23 (77)	9	13 (51)	6
Psychiatric home care	249 (1,069)	20	242 (996)	14
CAD <sup>b</sup>	16 (122)	2	9 (64)	2
Other outpatient care	23 (96)	7	89 (405)	14
<i>General healthcare</i>				
General practitioner	18 (46)	16	29 (90)	18
Alternative health care	13 (86)	5	2 (13)	4
Emergency care	0 (–)	0	6 (28)	4
Other general health care	8 (57)	2	5 (31)	4
<i>Day activity institutions</i>				
Day activity centre	83 (217)	21	137 (399)	24
Drop-in centre	79 (321)	13	145 (493)	20
Recreational/activity centre	6 (42)	4	32 (132)	8
Other institutions	29 (173)	5	43 (165)	8
<i>Medication</i>				
Prescribed	503 (553)	86	504 (460)	88
Non-prescribed	13 (54)	11	6 (32)	6

<sup>a</sup> Percentage of patients using the cost types concerned

<sup>b</sup> Consultation Office for Alcohol and Drug addiction

**Table 2** Mean total costs during the study

Measurement period	Guided peer support group + CAU		CAU		95% CI <sup>b</sup>
	<i>n</i>	Mean total costs	<i>n</i>	Mean total costs	
4 months prior to T0 <sup>a</sup>	56	4,170	48	2,078	−74, +4,561
T0–T4	56	2,379	44	2,215	−1,556, +1,711
T4–T8	51	3,170	46	2,395	−1,610, +3,076

<sup>a</sup> Period of 4 months before the start of the study<sup>b</sup> 95% non-parametric confidence interval (CI) for mean cost differences between groups. Lower and upper boundaries of the CI are presented**Table 3** Costs and WHOQoL-Bref results; ANOVA table based on mixed effect analyses

Outcome measure with model effects	<i>df</i>	<i>F</i>	<i>P</i>
<b>Costs</b>			
<i>Effects</i>			
Intervention	1,68	.025	.874
Time	1,67	.318	.575
Intervention × time	1,66	.896	.347
Time × centre	8,68	1.229	.296
Baseline costs (covariate)	1,67	4.825	<.05
<b>WHOQoL-Bref</b>			
<i>Effects</i>			
Intervention	1,98	.660	.418
Time	1,94	1.654	.202
Intervention × time	1,94	1.401	.240
Baseline results (covariate)	1,100	115.809	<.001

Mixed effect analyses included a random effect of subject

on mean total costs during T0–T8 are displayed in the first part of Table 3.

The effect of the baseline costs included as covariate in the model was significant. There was no significant intervention effect, nor were there significant differences over time (neither main effect nor interaction effect between intervention and time). Inclusion of the interaction between time and centre led to significant improvements of the model, although the effect of the interaction itself was not statistically significant.

Cost estimates based on the applied model, which corrected for baseline differences in costs and differences between centres over time, demonstrated that no relevant differences between mean total costs of both groups could be found. Estimated mean total costs of both groups were close to €5,750 during the 8 months of the study.

### Health Outcomes

Results of the WHOQoL-Bref, the primary outcome measure of the study, are presented in Table 4. At T0, the mean

**Table 4** WHOQoL-Bref results, mean values and standard deviations

Measurement	Guided peer support group + CAU		CAU	
	<i>n</i>	Mean (SD)	<i>n</i>	Mean (SD)
T0	56	60.2 (8.9)	50	56.7 (10.3)
T4	54	59.1 (9.2)	44	58.1 (10.7)
T8	52	60.9 (10.0)	45	59.2 (11.0)

score on the WHOQoL-Bref was somewhat higher for the peer support group.

Results of the mixed model analyses focusing on the WHOQoL-Bref are shown in the second part of Table 3. T0 results were included as covariate in the mixed model analyses. There was no significant effect of intervention or time. Furthermore, there were no indications for relevant differences between groups in WHOQoL-Bref results over time, as demonstrated by the non-significant interaction between intervention and time. The effect of the baseline results included as covariate in the model was significant.

### Sensitivity Analysis

Intervention adherence can have a substantial impact on the effectiveness of interventions, as demonstrated by the clinical results of this study (Castelein et al. 2008a). The sensitivity analysis specifically focused on the economic consequences of intervention adherence in the peer support groups. Of the 56 participants in the peer support groups, 31 attended at least nine sessions (high attenders) and 25 attended less than nine sessions (low attenders). Comparisons of differences in healthcare costs between high and low attenders demonstrated that the estimated mean total costs during the study were lower for high attenders. The mean difference in favour of the high attenders ranged from approximately €500 to €1,600, depending on the applied approach (directly measured costs or mixed model estimates).

Various additional analyses, including bootstrap analyses, were initially scheduled to examine the economic



outcomes in more detail. Due to the—not statistically significant nor clinically relevant—results of the standard analyses focusing on costs and the primary outcome measure, the additional analyses did not lead to relevant supplemental information for policy makers, and are therefore not presented in this paper.

## Discussion

The current paper presented the results of the first economic evaluation examining economic aspects and health outcomes of peer support groups for patients with a history of psychosis. In contrast to expectations, results of the economic evaluation did not show relevant differences in costs or primary health outcome (quality of life assessed with the WHOQoL-Bref) between patients who attended peer support groups (in addition to CAU) and those who received CAU only.

The mean costs of providing minimally guided peer support for patients with psychosis were €250 per patient. Mean total costs of healthcare utilisation during the 8 months of the study were approximately €5,750 for both groups, after correcting for initial cost differences between groups. These total costs are comparable with healthcare costs assessed in previous studies in patients with psychosis or schizophrenia (Flood et al. 2006; Knapp et al. 2002). Hospitalisation costs can have a large impact on the total amount of costs in the area of mental healthcare. In the current study, the influence of hospitalisation costs was somewhat less pronounced than in a previous study focusing on first episode psychosis (Stant et al. 2007). Approximately one-third of the total costs consisted of hospitalisation costs, in contrast to the study on first episode psychosis where more than half of the total costs was related to hospital admissions. When studies apply a societal perspective (Drummond et al. 1997), overall costs generally tend to be higher (and sometimes even much higher), especially when costs of productivity losses are included (Carr et al. 2003; Mangalore and Knapp 2007). In the present study, costs outside the healthcare sector were not assessed since it was assumed that these costs would not be influenced by peer support groups.

The primary outcome measure of the study was the WHOQoL-Bref, which is considered to be a reliable instrument for assessing quality of life, also in patients with mental illness (Skevington et al. 2004). Although the number of included patients was in accordance with required sample sizes calculated prior to the study, relevant differences between study groups could not be found on the WHOQoL-Bref. However, additional outcome measures did show improved functioning on various domains that are

relevant for patients with psychosis (Castelein et al. 2008a). For instance, patients in the peer support groups had a significant increase in contacts with peers outside of the sessions. Furthermore, patients significantly improved on esteem support (i.e. asked more often for help or advice, received more compliments from others). Another interesting finding concerns the relation between intervention adherence and the effectiveness of peer support groups. High attenders were functioning significantly better than low attenders according to various outcome measures, including overall quality of life assessed with the WHOQoL-Bref, the primary outcome measure. Results of additional economic analyses indicated that high attenders seem to make less use of healthcare resources and generate less costs than low attenders. These findings imply that it may be worthwhile, both from a clinical and economic point of view, to try to improve intervention adherence in peer support groups for psychosis.

There are various limitations that should be taken into account when interpreting the results presented in this paper. First of all, the differences in costs between groups prior to the start of the study complicated the comparisons of the mean total costs generated during the study. Therefore, costs were analysed by mixed models methodology that corrected for these initial differences. Secondly, the economic evaluation specifically focused on costs in the healthcare sector, without registering non-medical costs. Before the start of the study, it was assumed that peer support meetings would not lead to differences in non-medical costs between groups. However, since no studies have been published in this area before, it is unclear whether this assumption is correct. Finally, patients were followed for 8 months within the Dutch healthcare system. Although current findings do not suggest that longer follow-up periods would change overall results, following patients for a longer period of time may lead to valuable additional information on peer support groups. Moreover, since there can be considerable differences between countries in terms of the organisation of healthcare systems, measurement of costs, and types of care provided under the heading of CAU, the present results will need to be replicated outside of The Netherlands.

Prior to this study, there were no publications available on both clinical and economic aspects of peer support groups for psychosis. Based on the current findings, it can be concluded that the introduction of peer support groups for psychosis does not seem to affect overall healthcare expenses. Although no improvements were found in terms of overall quality of life when comparing the peer support groups with CAU, positive outcomes on additional outcome measures (significantly more social contacts and esteem support) did seem to favour the wider implementation of such groups.

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